

## **AMENDMENTS TO THE CLAIMS**

This listing of claims will replace all prior versions, and listings, of claims in the application:

### **Listing of Claims:**

1           1. (Currently amended) A method that facilitates secure electronic  
2 commerce, comprising:

3                 providing a consumer with a file of security data relating to an account  
4 maintained by a financial institution, wherein the file of security data includes:

5                 a consumer identifier,

6                 a private key for encryption and authentication of data,

7                 a first public key related to the private key for decryption  
8                 and authentication of data,

9                 an identifier identifying the financial institution,

10                 a second public key belonging to the financial institution,

11                 the account number that has been encrypted with a key  
12                 known only to the financial institution creating an encrypted  
13                 account number,

14                 a first certificate signed by a recognized certificate authority  
15                 that validates the financial institution,

16                 a second certificate signed by the financial institution that  
17                 validates the consumer, and

18                 computer algorithms to use the file of security data;

19                 creating a financial transaction between the consumer and a merchant,  
20         wherein the financial transaction is protected using security data from the file, and  
21         wherein the financial transaction is structured to contain an account number in a

22 form that is undecipherable by the merchant, thereby prevent the merchant from  
23 knowing the account number for the account;  
24 validating by the merchant that the financial institution identified by the  
25 financial transaction is acceptable using security data from the file;  
26 requesting by the merchant that the financial institution authorize the  
27 financial transaction;  
28 receiving by the merchant an authorization from the financial institution to  
29 complete the financial transaction;  
30 completing the financial transaction between the consumer and the  
31 merchant; and  
32 notifying the financial institution that the financial transaction is complete.

1           2. (Cancelled)

1           3. (Currently amended) The method of ~~claim 2~~ claim 1, wherein the  
2 file of security data is provided to the consumer on a smart card.

1           4. (Original) The method of claim 3, wherein protecting the financial  
2 transaction involves:  
3           creating a first hash of the financial transaction; and  
4           encrypting the first hash, the second certificate, and the encrypted account  
5 number using the second public key creating a secure envelope of transaction  
6 data, wherein the first hash is created at a secure site available only to the  
7 consumer.

1           5. (Original) The method of claim 4, wherein requesting by the  
2 merchant that the financial institution authorize the financial transaction involves:  
3           creating a second hash of the financial transaction by the merchant;

4            sending the secure envelope and the second hash to the financial  
5 institution;  
6            decrypting at the financial institution the secure envelope using the private  
7 key of the financial institution;  
8            comparing the first hash with the second hash; and  
9            if the first hash is identical to the second hash,  
10            decrypting the encrypted account number to recover the  
11            account number for the account belonging to the consumer,  
12            verifying that the financial transaction is valid for the  
13            account, and  
14            if valid, authorizing the financial transaction.

1            6.        (Original) The method of claim 5, wherein verifying that the  
2 financial transaction is valid for the account includes:  
3            verifying that the second certificate was signed by the financial institution;  
4            determining that the account is valid; and  
5            ensuring that a transaction amount is not greater than an authorized  
6 transaction amount.

1            7.        (Original) The method of claim 4, wherein the secure site  
2 available only to the consumer is within the smart card.

1            8.        (Currently amended) The method of ~~claim 2~~ claim 1, wherein  
2 validating by the merchant that the financial institution identified by the financial  
3 transaction is acceptable involves:  
4            receiving at the merchant the first certificate; and  
5            validating that the first certificate was signed by the recognized certificate  
6 authority.

1           9. (Currently amended) A computer-readable storage medium storing  
2 instructions that when executed by a computer cause the computer to perform a  
3 method that facilitates secure electronic commerce, comprising:  
4           providing a consumer with a file of security data relating to an account  
5 maintained by a financial institution wherein the file of security data includes:  
6                 a consumer identifier,  
7                 a private key for encryption and authentication of data,  
8                 a first public key related to the private key for decryption  
9                 and authentication of data,  
10                 an identifier identifying the financial institution,  
11                 a second public key belonging to the financial institution,  
12                 the account number that has been encrypted with a key  
13                 known only to the financial institution creating an encrypted  
14                 account number,  
15                 a first certificate signed by a recognized certificate authority  
16                 that validates the financial institution,  
17                 a second certificate signed by the financial institution that  
18                 validates the consumer,  
19                 computer algorithms to use the file of security data;  
20                 creating a financial transaction between the consumer and a merchant,  
21                 wherein the financial transaction is protected using security data from the file, and  
22                 wherein the financial transaction is structured to contain an account number in a  
23                 form that is undecipherable by the merchant, thereby prevent the merchant from  
24                 knowing the account number for the account;  
25                 validating by the merchant that the financial institution identified by the  
26                 financial transaction is acceptable using security data from the file;  
27                 requesting by the merchant that the financial institution authorize the  
28                 financial transaction;

29 receiving by the merchant an authorization from the financial institution to  
30 complete the financial transaction;  
31 completing the financial transaction between the consumer and the  
32 merchant; and  
33 notifying the financial institution that the financial transaction is complete.

1 10. (Cancelled)

1 11. (Currently amended) The computer-readable storage medium of  
2 ~~claim 10~~ claim 9, wherein the file of security data is provided to the consumer on  
3 a smart card.

1 12. (Original) The computer-readable storage medium of claim 11,  
2 wherein protecting the financial transaction involves:  
3 creating a first hash of the financial transaction; and  
4 encrypting the first hash, the second certificate, and the encrypted account  
5 number using the second public key creating a secure envelope of transaction  
6 data, wherein the first hash is created at a secure site available only to the  
7 consumer.

1 13. (Original) The computer-readable storage medium of claim 12,  
2 wherein requesting by the merchant that the financial institution authorize the  
3 financial transaction involves:  
4 creating a second hash of the financial transaction by the merchant;  
5 sending the secure envelope and the second hash to the financial  
6 institution;  
7 decrypting at the financial institution the secure envelope using the private  
8 key of the financial institution;

9               comparing the first hash with the second hash; and  
10              if the first hash is identical to the second hash,  
11                  decrypting the encrypted account number to recover the  
12                  account number for the account belonging to the consumer,  
13                  verifying that the financial transaction is valid for the  
14                  account, and  
15                  if valid, authorizing the financial transaction.

1               14. (Original) The computer-readable storage medium of claim 13,  
2   wherein verifying that the financial transaction is valid for the account includes:  
3                  verifying that the second certificate was signed by the financial institution;  
4                  determining that the account is valid; and  
5                  ensuring that a transaction amount is not greater than an authorized  
6   transaction amount.

1               15. (Original) The computer-readable storage medium of claim 12,  
2   wherein the secure site available only to the consumer is within the smart card.

1               16. (Currently amended) The computer-readable storage medium of  
2   | ~~claim 10~~ claim 9, wherein validating by the merchant that the financial institution  
3   identified by the financial transaction is acceptable involves:  
4                  receiving at the merchant the first certificate; and  
5                  validating that the first certificate was signed by the recognized certificate  
6   authority.

1               17. (Currently amended) An apparatus that facilitates secure electronic  
2   commerce, comprising:

3                   a providing mechanism configured to provide a consumer with a  
4                   file of security data relating to an account maintained by a financial  
5                   institution wherein the file of security data includes:

6                   a consumer identifier,  
7                   a private key for encryption and authentication of data,  
8                   a first public key related to the private key for decryption  
9                   and authentication of data,  
10                  an identifier identifying the financial institution,  
11                  a second public key belonging to the financial institution,  
12                  the account number that has been encrypted with a key  
13                  known only to the financial institution creating an encrypted  
14                  account number,  
15                  a first certificate signed by a recognized certificate authority  
16                  that validates the financial institution,  
17                  a second certificate signed by the financial institution that  
18                  validates the consumer, and  
19                  computer algorithms to use the file of security data;  
20                  a first creating mechanism configured to create a financial transaction  
21                  between the consumer and a merchant, wherein the financial transaction is  
22                  protected using security data from the file, and wherein the financial transaction is  
23                  structured to contain an account number in a form that is undecipherable by the  
24                  merchant, thereby prevent the merchant from knowing the account number for the  
25                  account;  
26                  a first validating mechanism that is configured to validate that the financial  
27                  institution identified by the financial transaction is acceptable using security data  
28                  from the file;  
29                  a requesting mechanism that is configured to request that the financial  
30                  institution authorize the financial transaction;

31           a first receiving mechanism that is configured to receive an authorization  
32       from the financial institution to complete the financial transaction;  
33           a completing mechanism that is configured to complete the financial  
34       transaction between the consumer and the merchant; and  
35           a notifying mechanism that is configured to notify the financial institution  
36       that the financial transaction is complete.

1           18.     (Cancelled)

1           19.     (Currently amended) The apparatus of ~~claim 18~~ claim 17, wherein  
2       the file of security data is provided to the consumer on a smart card.

1           20.    (Original) The apparatus of claim 19, further comprising:  
2           a second creating mechanism that is configured to create a first hash of the  
3       financial transaction; and  
4           an encrypting mechanism that is configured to encrypt the first hash, the  
5       second certificate, and the encrypted account number using the second public key  
6       creating a secure envelope of transaction data, wherein the first hash is created at a  
7       secure site available only to the consumer.

1           21.    (Original) The apparatus of claim 20, further comprising:  
2           a creating mechanism that is configured to create a second hash of the  
3       financial transaction by the merchant;  
4           a sending mechanism that is configured to send the secure envelope and  
5       the second hash to the financial institution;  
6           a decrypting mechanism that is configured to decrypt the secure envelope  
7       using the private key of the financial institution;

8           a comparing mechanism that is configured to compare the first hash with  
9   the second hash;

10           wherein the decrypting mechanism is further configured to decrypt the  
11   encrypted account number to recover the account number for the account  
12   belonging to the consumer;

13           a first verifying mechanism that is configured to verify that the financial  
14   transaction is valid for the account; and

15           an authorizing mechanism that is configured to authorize the financial  
16   transaction.

1           22. (Original) The apparatus of claim 21, further comprising:

2           a second verifying mechanism that is configured to verify that the second  
3   certificate was signed by the financial institution;

4           a determining mechanism that is configured to determine that the account  
5   is valid; and

6           an ensuring mechanism that is configured to ensure that a transaction  
7   amount is not greater than an authorized transaction amount.

1           23. (Original) The apparatus of claim 20, wherein the secure site  
2   available only to the consumer is within the smart card.

1 |        24. (Currently amended) The apparatus of ~~claim 18~~ claim 17, further  
2   comprising:

3           a second receiving mechanism at the merchant that is configured to receive  
4   the first certificate; and

5           a second validating mechanism that is configured to validate that the first  
6   certificate was signed by the recognized certificate authority.